DOCUMENT RESUME

ED 194 881 CS 005 726

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TITLE Cloze Instruction Research: A Second Look.
INSTITUTION ERIC Clearinghouse on Reading and Communication Skills, Urbana, Ill.: International Reading Association, Newark, Del.
SPONS AGENCY National Inst. of Education (DHEW), Washington, D.C.
PUB DATE 80
CONTRACT 400-78-0026
NOTE 55p.
AVAILABLE FROM International Reading Association, 800 Barksdale Rd., Newark, DE 19711 (Order No. 867, $4.00 non-member, $2.50 member)

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS *Cloze Procedure: Elementary Secondary Education: Literature Reviews: *Reading Instruction: Research Needs: *Teaching Methods

ABSTRACT

The purpose of this monograph is to review and synthesize the literature pertaining directly to the use of cloze as a teaching technique. The literature review is arranged into eight sections: (1) analysis of comparative studies, in which studies that have compared the cloze procedure are examined: (2) analysis of instructional goals, in which the effectiveness of cloze for different instructional purposes is reviewed: (3) analysis of materials, in which the use of cloze with various types of reading materials and the transfer effects of cloze are discussed: (4) analysis of age, grade level, and reading ability: (5) analysis of teaching procedures, in which discussion, grouping, sequencing, and length of instruction are examined: (6) analysis of deletion strategies: (7) analysis of scoring methods: and (8) analysis of students attitudes. Following the individual analyses, the conclusions of the complete review are summarized. The monograph also contains a discussion of future directions for research and instruction involving cloze. Each study reviewed in the monograph is summarized in an appendix. (FL)

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Cloze Instruction Research:

A Second Look

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Reading Information Series:
Where Do We Go?
1980

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CS005726

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This publication was prepared with funding from the National Institute of Education, U.S. Department of Education, under contract no. 400-78-0026. Contractors undertaking such projects under government sponsorship are encouraged to express freely their judgment in professional and technical matters. Prior to publication, the manuscript was submitted to the International Reading Association for critical review and determination of professional competence. This publication has met such standards. Points of view or opinions, however, do not necessarily represent the official view or opinions of either the International Reading Association or the National Institute of Education.

Printed in the United States of America, 1980

Library of Congress Cataloging in Publication Data

Jongsma, Eugene A.
Cloze instruction research.

(Reading information series)
Bibliography: p.
1. Cloze procedure. I. Title. II. Series.
LB1050.3.J66 371.3′028 80-21867
ISBN 0-87207-867-1

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Foreword

When Wilson Taylor introduced cloze tests, researchers were quick to see their usefulness for measuring the difficulty of materials. But few of us thought they would make good teaching exercises. We thought that the items were too complicated psychologically. Many different cues have to be used to answer an item. Each cue makes use of a different kind of skill. And it seemed hard to find even two items that would provide practice on the same skill. So cloze exercises would not provide the kind of systematic practice that we thought was needed.

Fortunately, a few people disagreed with us and set out to prove us wrong. As Jongsma reported in his earlier monograph, initial results were not very promising. But the researchers pressed ahead and others joined them. Now, a short time later, their results have been so abundant and productive that Jongsma has been asked to write this second review.

There is much to praise about the present review, but three features seem especially valuable. The first is the clarity and brevity with which Jongsma summarizes this widely scattered body of research. His earlier review did the same thing and helped to touch off many of the studies he reviews now. This present version no doubt will be even more seminal.

Second, teachers and researchers should carefully study how Jongsma organized this review, for that organization

carries a very important message. Jongsma believes that cloze exercises are not, by themselves, a complete instructional treatment. Variations in the students we teach and differences in how we make, present, and score cloze exercises result in important distinctions in the kind and amount of skills students learn. The problem, as Jongsma sees it, is to find out which variations serve which purposes best for which students.

The third feature is the provocative way Jongsma puts his conclusions. Some might think he should have qualified them heavily. But that would have hidden the gaps in our knowledge of cloze exercises. Instead, he states them boldly, hurling them as challenges to the teachers and researchers who will do the next wave of studies. Judging from those reviewed here, that wave should be very interesting indeed.

John R. Bormuth
University of Chicago

Preface

The Educational Resources Information Center (ERIC) is a national information system developed by the United States Office of Education and now sponsored by the National Institute of Education (NIE). It provides ready access to descriptions of exemplary programs, research and development efforts, and related information useful in developing more effective educational programs.

Through its network of specialized centers or clearinghouses, each of which is responsible for a particular educational area, ERIC acquires, evaluates, abstracts, and indexes current significant information and lists this information in its reference publications.

ERIC/RCS, the ERIC Clearinghouse on Reading and Communication Skills, disseminates educational information related to research, instruction, and personnel preparation at all levels and in all institutions. The scope of interest of the Clearinghouse includes relevant research reports, literature reviews, curriculum guides and descriptions, conference papers, project or program reviews, and other print materials related to all aspects of reading, English, educational journalism, and speech communication.

The ERIC system has already made available—through the ERIC Document Reproduction System—much informative data. However, if the findings of specific educational research are to be intelligible to teachers and applicable to teaching,

considerable bodies of data must be reevaluated, focused, translated, and molded into an essentially different context. Rather than resting at the point of making research reports readily accessible, NIE has directed the separate clearinghouses to work with professional organizations in developing information analysis papers in specific areas within the scope of the clearinghouses.

Cloze Instruction Research: A Second Look is a companion volume of *The Cloze Procedure As A Teaching Technique*, also by Eugene Jongsma and published in 1971 by ERIC/CRIER and the International Reading Association. ERIC/RCS is pleased to cooperate with the International Reading Association in making this book available.

Bernard O'Donnell
Director, ERIC/RCS

Introduction

When *The Cloze Procedure As A Teaching Technique* (Jongsma, 1971) was written, the cloze procedure had already become a widely used research tool. However, cloze was just beginning to make its way into the classroom as a device for teachers to use. Unlike the vast body of research on cloze as a readability and assessment technique, the literature on cloze as an instructional technique was sparse. Only nine studies, nearly all the existing research up to that point, were reviewed in that volume. One of the major conclusions reached in that review was "...the research evidence, at the present time, does *not* suggest that the cloze procedure is an effective teaching technique" (p.18).

In the past ten years, a plethora of articles have appeared extolling the instructional virtues of cloze. This seems to raise a curious paradox. Either practitioners aren't heeding the advice of researchers or researchers aren't discovering what practitioners know to be true. In any event, much has happened in the past ten years and perhaps it's appropriate to take a fresh look at the issue.

Reading Information Series: Where Do We Go? was originally conceived by ERIC/CRIER to serve as a stimulus for research. Aimed at college professors and graduate students, the series sought to review selected topics, with the hope of extending and strengthening research on those topics. Apparently, the series has succeeded. In this volume, thirty-six

studies have been reviewed, contrasted with nine studies included in the 1971 review. Twenty-six of the thirty-six studies are doctoral dissertations.

The purpose of this monograph is similar to that of the earlier volume: that is, to critically review and synthesize the literature pertaining directly to the use of cloze as a teaching technique. In addition, weaknesses in the existing literature will be identified and suggestions will be made regarding future research.

Perhaps a few words should be mentioned about the literature search that was conducted in preparation for this monograph. The literature search was basically limited to the past ten years, 1970-1980, the period since the 1971 review. One study conducted prior to 1970 has been included simply because it was omitted from the previous review. None of the studies included in the earlier volume has been re-reviewed. In an effort to identify all the existing research, searches were made of the following data bases:

Current Index to Journals in Education
Dissertation Abstracts International
Resources in Education
Psychological Abstracts
Language and Language Behavior Abstracts

Because emphasis in this review is on the kinds of questions that have been asked and the general findings, the review was limited to published sources, including *Dissertation Abstracts International*, and did not attempt to gather the original unpublished dissertations.

All of the studies which had used the cloze procedure were screened. Needless to say, a vast amount of research has been conducted either using cloze as a tool to examine language variables or investigating characteristics of the cloze procedure itself. Only those studies which dealt directly with the instructional uses of cloze were selected and reviewed for this monograph.

Review of the Literature

The increased growth of research on cloze as a teaching technique precludes individual critiques of each study in this volume. Therefore, an effort has been made to analyze the literature by selective dimensions. It is hoped that this approach will lead to a state-of-the-art summary that is meaningful and useful. All of the studies reviewed for this monograph have been summarized in the Appendix.

The review of the literature has been organized into eight sections. Each section is briefly described below:

1. *Analysis of Comparative Studies.* Examines those studies which have compared the cloze procedure with other methods of instruction.
2. *Analysis of Instructional Goals.* Reviews the effectiveness of cloze for different instructional purposes.
3. *Analysis of Materials.* Discusses the use of cloze with various types of reading materials and the transfer effects of cloze instruction.
4. *Analysis of Age, Grade Level, and Reading Ability.* Explores the effectiveness of cloze instruction for different age, grade, or reading levels.
5. *Analysis of Teaching Procedures.* Examines discussion, grouping, sequencing, and length of instruction.
6. *Analysis of Deletion Strategies.* Reviews the effects of different deletion systems and modified cloze formats.
7. *Analysis of Scoring Methods.* Compares the instructional value of different scoring systems.

8. *Analysis of Student Attitudes.* Examines student attitudes toward cloze instruction

Immediately following the eight individual analyses, the conclusions of the complete review will be summarized.

Analysis of Comparative Studies

Is the cloze procedure an effective teaching technique? Most investigators have sought to answer that question through a comparative, rather than an absolute approach. That is, cloze has been compared to other methods of teaching reading as well as other methods of teaching content subjects. Twenty-seven of the thirty-six studies have used this approach.

Cloze has been compared to a wide variety of instructional methods: conventional comprehension exercises (Cox, 1974; Culhane, 1972; Ellington, 1972; Houston, 1976; Johns, 1977; Kazmierski, 1973; Martinez, 1978; Pepin, 1973; Pessah, 1975; Rhodes, 1972, Rynders, 1971; and Stewart, 1967); lecture-discussion (McNamara, 1977; Phillips, 1973; and Power, 1976); SQ3R (McNamara, 1977); daily silent reading (Faubion, 1971); self-selected reading and phonic exercises (Paradis & Bayne, 1975); dramatization (Blackwell, et al., 1972); reading centers (Sampson, 1979); oral language drills (Whitmer, 1975); oral reading (Kennedy, 1972); regular algebra instruction (Burnham, 1973); regular geometry instruction (King, 1974); regular spelling instruction (Clanton, 1977); regular social studies instruction (Grant, 1976); and conventional foreign language instruction (Greenewald, 1974).

The most common procedure has been to employ an experimental design in which some of the students receive one or more forms of cloze instruction (experimental group) while the remaining students receive the "regular" or "traditional" method of instruction or some alternative method contrived for the study (control group).

These comparative studies, which are common to educational research, have certain inherent weaknesses. Seldom is cloze the sole treatment received by the experimental group. Cloze instruction is usually just one of many efforts directed at improving reading ability during the typical school day. These studies are also especially vulnerable to the Hawthorne effect which accompanies novel methods of

instruction. Inability to control extraneous variables in such studies also threatens internal validity.

Given the limitations of these studies, the literature strongly indicates that cloze is no better or no worse than conventional methods of reading instruction. Seventeen of the twenty-seven comparative studies (63 percent) found no significant differences between cloze and other instructional methods. Three studies (Burnham, 1973; Grant, 1976; and Sampson, 1979), or 11 percent found some differences favoring cloze. Strong differences in support of cloze were found in seven studies (Bernath, 1977; Blackwell, et al., 1972; Culhane, 1972; Kennedy, 1972; Martinez, 1978; Pessaha, 1975; and Whitmer, 1975), or 26 percent of the total.

These results closely parallel those of earlier cloze instruction research. In the previous review (Jongsma, 1971), six of the nine studies were comparative studies. Four of the six studies (67 percent) found no significant differences between cloze and other methods of instruction; one (17 percent) found some differences favoring cloze; and one (17 percent) found strong differences in support of cloze.

One may well wonder why differences were found in a few studies but not in the overwhelming majority. One possible explanation may lie with the control treatments that cloze was compared to. Whitmer (1975), for example, compared the use of written cloze exercises in French with oral drills and causeries (informal chats) and then evaluated progress on a standardized French reading test. Blackwell (1972) compared the use of cloze exercises with dramatization and assessed gains on a standardized reading test. Kennedy (1972) compared auditory and visual cloze training with oral reading and no training and then assessed the effects on cloze tests and a standardized listening-reading test. It would seem that in each of these studies, the control treatments were not focused specifically on improving reading. Yet their effectiveness was judged on the basis of reading tests. The dependent or criterion measures were simply more closely aligned with cloze instruction than they were with the other methods used.

Comparative studies don't fully answer the question of effectiveness. Statistical testing in such studies is usually directed at determining if there is a significant difference between treatments. The finding of no significant differences

may mean the treatments are equally effective or equally ineffective. As mentioned earlier, seventeen studies reported no significant differences between cloze and the other instructional methods. An effort was made to look beyond their non-significant differences to determine whether the use of cloze resulted in absolute or real progress. That is, did the cloze instructional groups make progress from pre- to post-assessment, despite their lack of superiority over their control counterparts? Five of the investigators (Clanton, 1977; McNamara, 1977; Rynders, 1971; Stewart, 1967; and Greenewald, 1974) report significant gains in achievement, even though there were no differences among treatments. Rynders, for example, found that the sixth graders in his study made mean gains of six months in comprehension, after five weeks of instruction, using either cloze or more conventional comprehension exercises. Seven of the studies (Cox, 1974; Ellington, 1972; King, 1974; Paradis & Bayne, 1975; Phillips, 1973; Power, 1976; and Johns, 1977) do not mention absolute gains, making it impossible to judge the effectiveness of cloze. The remaining five studies (Faubion, 1971; Houston, 1976; Kazmierski, 1973; Pepin, 1973; and Rhodes, 1972) found cloze instruction, as well as the comparative treatment, to be ineffective.

To summarize the analysis of comparative studies, then, it appears that the cloze procedure can be an effective instructional technique. However, cloze is no more or less effective than many of the conventional instructional methods that are widely used.

Analysis of Instructional Goals

The cloze procedure has been used for a variety of purposes: to improve general reading achievement, to increase reading or listening comprehension, to develop reading vocabulary, to increase reading speed, to improve spelling, to increase knowledge of content subjects, and to improve the ability to read content area material. One may analyze the literature by looking at differential effects for various instructional purposes. Is the cloze procedure more effective for certain instructional goals—for instance, comprehension or vocabulary—than it is for others?

Three conclusions seem to emerge when the literature is analyzed in this fashion. First, the cloze procedure has been most effective in developing comprehension. A large majority of the investigators have used cloze for this purpose. Regardless of whether progress is assessed with standardized achievement tests or with project-developed cloze tests, cloze instruction is as equally effective as conventional methods of comprehension instruction. Second, cloze does not seem to be effective in improving reading vocabulary. However, this may be a function of the way progress has been evaluated. Nearly every investigator has used a standardized vocabulary test in which words are presented in isolation. It's not surprising that short-term cloze instruction has little impact on such measures. Third, cloze instruction does appear useful in helping students learn to read and understand content material. The strongest evidence has been reported in social studies (Grant, 1976; Paige, 1976; Martinez, 1978; and McNamara, 1977) but there is also some support in math (Burnham, 1973).

Analysis of Materials

One way of analyzing the literature is to look at the types of reading materials that were used. Is cloze instruction more effective with certain types of material than with others? A common dichotomy that is often made in the literature is the distinction between narrative, or story-like materials, and expository, or content-based materials. Some studies employed narrative passages, others were restricted to exposition, and some used a combination of both. No study was found that specifically investigated the differential effects of cloze instruction on type of material. Since both significant and non-significant results were found for both narrative and expository materials, we have to conclude that cloze instruction is no more effective for any particular type of material. A definite trend was observed in that more and more researchers are using cloze to teach subject matter content or reading in the content areas.

Another aspect of materials analysis is the question of transfer effects. Does training in specific content materials improve general reading ability? Does training in general

reading materials transfer to the reading of content materials? Several studies have explored this issue.

Three studies examined transfer effects within the area of social studies. Grant (1976) provided all cloze instruction with social studies materials. After nine weeks of instruction, she found that students scored significantly higher on a test of social studies content but did not improve on the *Gates-MacGinitie Reading Test,* a test of general reading ability. Martinez (1978) trained students in narrative materials then assessed progress on a social studies cloze test and a social studies content test. Significant improvement was observed on both tests. Like Grant, Guscott (1971) offered instruction only in social studies materials. He found significant improvement on the reading portion of the *Iowa Test of Basic Skills* but not on a social studies cloze test. Guscott's findings, however, must be viewed with some skepticism since he used a posttest-only design and had no assurances that the groups were evenly matched.

Two studies explored transfer effects in foreign language instruction. Binkley (1975) found that cloze training with German passages did improve reading ability in German but did not significantly increase performance on the *Nelson-Denny*. Greenewald (1974) found no significant difference on a French cloze test between students who received instruction on French cloze passages and those who received training on English cloze passages.

Burnham (1973) used algebra materials for all cloze instruction. Posttesting revealed significant improvement in the ability to read math materials but no comparable improvement in the ability to read "ordinary English." Likewise, Phillips (1973) found that instruction in introductory business materials did not transfer to the *Nelson-Denny*.

A slightly different form of transfer was examined by Kennedy (1972). One experimental group received auditory cloze training while another received visual cloze training. The effects for both groups were assessed on listening tests and reading tests. Visual cloze training was found to be the most generalizable.

When these studies are viewed collectively, some tentative patterns seem to emerge. It appears that training in general cloze materials does transfer to the reading of specific

content materials. On the other hand, cloze instruction in specific content materials may result in improved ability to read similar materials but is unlikely to raise general reading ability. This conclusion is somewhat speculative and should be viewed cautiously. Perhaps transfer effects are an issue worth exploring in future research.

One final aspect of instructional materials should be mentioned and that is difficulty. There are indications that many researchers may have used materials that were too difficult for their students. Perhaps a few examples will illustrate this point. In constructing her cloze posttest, Martinez (1978) selected a passage from a sixth-grade social studies textbook which the students had not been exposed to. A subsequent readability check revealed that the passage was written at a tenth-grade level of difficulty. Yet, the passage was still used. In the Grant (1976) study, students who had received cloze instruction for nine weeks still scored, on the average, below 30 percent correct on the cloze posttest, clearly a sign of frustration. Although Rhodes (1972) prepared passages at each level of the Dale-Chall scale, he prepared twice as many at the highest level, college difficulty, supposedly to prevent ceiling effects. It's quite likely that most of these passages were much too difficult for his sixth graders.

It's impossible to assess what effect excessive difficulty may have had on the studies reviewed in this monograph. Anyone who has ever worked a cloze exercise knows it's a difficult task. The practice of judging students' reading abilities on the basis of scores on a standardized test and then assigning cloze exercises of the same level should be viewed with skepticism. Future researchers, as well as practitioners, need to be more cautious in matching cloze instructional materials with their students' abilities.

Analysis of Age, Grade Level, and Reading Ability

Another way of analyzing the literature is to look at differences among age or grade levels. Is cloze instruction better suited for a particular age group? The research has been fairly evenly distributed across grade levels. Approximately 17 percent of the studies have been conducted with primary children, 36 percent with intermediate grade students, 19

percent with junior-senior high schoolers, and 28 percent with college students.

When the results of the studies are analyzed by the grade ranges mentioned above, no clear pattern emerges. Cloze instruction has been strongly successful, moderately successful, and unsuccessful at all grade ranges. There is no evidence to support the use of cloze instruction at one particular grade range as opposed to another. One point is worth noting here, however. It is often recommended that the use of cloze be restricted to fourth grade and above. There is sufficient evidence to suggest that cloze instruction can be just as effective with primary grade children, provided it is used in a form similar to that employed by Gunn and Elkins (1976), Kennedy (1972), Sampson (1979), or Paradis and Bayne (1975).

The effectiveness of cloze instruction may also be analyzed by the personal characteristics of the learners. Is cloze instruction more effective with particular types of readers, say high ability or low ability students? Six studies have utilized levels by treatment designs to examine this question (Cox, 1974; Culhane, 1972; Guscott, 1971; Kazmierski, 1973; Rhodes, 1972; and Yellin, 1978). In each study, except Culhane, which will be discussed later, the researcher stratified the sample on the basis of reading ability which was usually determined by scores on a standardized test. This stratification usually resulted in three groups—above average, average, and below average readers. This type of design allows for the testing of aptitude-treatment interactions. That is, the investigator can explore whether a certain type of treatment is more or less effective with particular types of students.

In every case, there was no significant interaction between reading ability and the type of cloze instruction. The one exception is Culhane. He stratified his sample on the basis of IQ scores, rather than reading ability. He then looked at the interaction between intelligence and method of scoring cloze teaching exercises (exact replacements versus synonyms). A significant interaction was found, indicating that synonym scoring was more effective with low IQ students. Since Culhane's is the only instance of this interaction, it should probably be viewed as tentative until confirmed in future replications. Overall, the research consistently indicates that cloze instruction is no more/no less effective for particular

levels of reading ability nor are certain types of cloze formats better suited for particular learners.

Analysis of Teaching Procedures

Cloze can be presented to students in so many different ways that it is difficult to judge its effectiveness without considering the particular ways in which cloze was presented and used. This section will examine the specific presentation features of discussion, grouping, sequencing, and length of instruction.

Discussion. One of the criticisms made of early cloze instruction research was the lack of real teaching. Many investigators relied on cloze to do all the work. It was believed that simply having students complete a specified number of cloze exercises would result in improved reading ability. In the first monograph (Jongsma, 1971), it was suggested that future studies might explore the effects of discussion on cloze instruction.

Four studies specifically assessed the effects of discussion. Cox (1974) compared three instructional treatments on disadvantaged fourth graders. In the first condition, the teacher gave ten minutes of instruction on the use of context clues after which students silently and independently completed a cloze exercise and then checked their responses. The second treatment consisted of students' first completing a cloze exercise independently and then participating in teacher-led class discussion of the responses and clues. Discussion was followed by a new cloze exercise for reinforcement. The third group read the same passages intact and answered multiple-choice questions. Class discussion of their answers and selected oral rereading for verification followed. Cox found no significant differences among the three treatments.

Yellin (1978) compared a "product approach" and a "process approach" to cloze instruction. The product approach was essentially a self-instructional method. Students completed cloze exercises silently and independently, then scored their responses against the exact replacements provided by the teacher. In the process approach, students worked cloze exercises cooperatively in small discussion groups while the

teacher served as a facilitator. No significant differences were found between the two groups.

Faubion (1971) also examined the effects of discussion with fourth graders. One experimental cloze group simply completed a cloze exercise, silently and independently, each day and then was given the previous day's exercise in corrected form. The second experimental group followed a similar pattern except they discussed the previous day's exercise, verbalizing the appropriateness of their choices. A third group read the same passages silently in an intact form. There were no significant differences among the three treatments.

Pessah (1975) looked at the effects of integrating cloze instruction into a remedial reading program at the college level. A control group which received the "regular" remedial instruction was compared to three experimental cloze groups. Two of the cloze groups used discussion while the third was completely individualized. Although the experimental groups outperformed the control groups, there were no significant differences among the three experimental groups.

Contrary to logical expectations, studies that have specifically tested the effects of discussion have consistently found that cloze instruction with discussion is no more effective than independent completion of cloze exercises. Does this mean that discussing cloze exercises is unproductive and a waste of time? Not necessarily. First, some investigators have found cloze instruction with discussion to be successful. For example, Grant (1976), Gunn and Elkins (1976), Martinez (1978), Rynders (1971), Sampson (1979), Sinatra (1977), and Smith (1970) all made discussion an integral part of instruction and found it effective, even though discussion wasn't an isolated factor that was tested. However, including discussion doesn't guarantee success as Johns' study (1977) illustrates. Second, discussion as a research variable is rather nebulous. Effective discussion depends upon many conditions such as the teacher's ability to recognize syntactic and semantic clues to cloze replacements, the ability to communicate those clues to students, students' abilities to perceive and internalize those clues, and probably a host of other conditions. It's impossible to judge the quality of discussion from written research reports. Although the studies that have specifically tested for the effects of discussion don't confirm

its effectiveness—when all the research is taken into consideration—the literature seems to suggest that cloze instruction is likely to be more effective with discussion than without it.

One other aspect of discussion is worth noting and that is who leads the discussion. In some studies, the teacher took control of the discussion with intentions to "teach" predetermined concepts. In other studies, the teacher served as a facilitator to small student discussion groups and teaching seemed to be incidental. In still other studies, the students were solely responsible for the discussion process. Does the method used make any difference? Only one study looked at this particular aspect of instruction. Culhane (1972) found teacher-led discussion following cloze exercises to be significantly more effective than student-led discussion.

Grouping. Another issue that is closely related to discussion is that of grouping. Do certain grouping patterns facilitate the use of cloze? Only one study could be found that specifically examined this question. Rynders (1971) compared the use of cloze exercises with the use of intact passages accompanied by interpretive comprehension questions. Within each treatment, students were assigned to either homogeneous or heterogeneous discussion groups. In other words, type of grouping was built into the study as a testable factor. Rynders found no significant differences between these two types of grouping patterns.

Some studies have used cloze instruction in a completely individualized manner. Others have relied heavily on small discussion groups of three to five students each. Still others have used whole class instruction, even to the point where students didn't have individual copies of the cloze exercises but worked them collectively via an overhead projector. At this point, there is no empirical evidence to suggest that one type of grouping arrangement is more effective than another for cloze instruction.

Sequencing. Whenever various levels or types of cloze materials are used for instruction, sequencing becomes an issue. Are some sequencing patterns more effective than others? Only one investigator specifically tested for a sequencing effect. Power (1976) prepared a series of 23 cloze exercises to use with college students enrolled in a developmental reading course. The passages were all taken from

college textbooks and sequenced in order of difficulty. One experimental cloze group received the exercises in ascending order of difficulty; the other experimental group received them in descending order. Although a significant difference was found for order, it was a fluke. Subsequent analysis revealed that the difference was due to only one of the 23 passages. In essence, then, order of difficulty made no difference. This may, however, be a function of the limited range in difficulty represented in this study.

In a very general sense, researchers have approached sequencing in one of two ways—very carefully or not at all. Either they systematically sequence instructional activities in terms of difficulty or purpose or they develop a blanket set of cloze exercises which differ very little in difficulty or purpose.

Four studies could be used to illustrate systematic sequencing. In developing materials for primary children, Gunn and Elkins (1976) began with individual sentences. Single deletions were obvious and highly predictable. Next came language experience stories written by other children of the same age. Later, exercises were contrived to demonstrate that word meaning could be acquired from context. Finally, other passages were used to show the role of function words

Kennedy (1972) also used a progression from individual sentences to short stories. The first half of each training session was spent working through ten individual sentences. Short basal stories were used during the second half. The entire instructional sequence culminated with a slightly longer basal story.

Martinez (1978) structured her instructional program around seven context clues. Each training session followed a carefully sequenced progression: 1) A ten minute "directed teaching lesson" was presented by the teacher in which a particular context clue was introduced and examples presented. 2) Students practiced that clue on ten individual sentences (one deletion each). 3) Follow-up discussion focused on the appropriateness of responses and signals to clues. 4) Students worked cloze passages containing selective deletions related to that particular context clue. 5) Discussion centered on the use of the clue in longer passages. Each session lasted approximately 45 minutes.

Rhodes (1972) carefully monitored the readability of his cloze exercises. A large pool of exercises was developed with several at each Dale-Chall level. Each student's progression through the levels was dependent upon successful performance. Presumably, levels of difficulty were adjusted to students' needs.

All four of the studies discussed above, except Rhodes, found cloze to be an effective instructional technique. Rhodes' study differs in two respects from the other three, which might account for the lack of significant differences. First, there was little or no student discussion or direct teaching. Second, although readability was sequenced, passage length remained fairly constant. The similarities among Gunn and Elkins, Kennedy, and Martinez should speak for themselves. Apparently, cloze instruction which is carefully sequenced, for example in length and difficulty, and adjusted to the reading abilities of students, is more effective than the undifferentiated use of cloze exercises.

Length of instruction. In the earlier monograph (Jongsma, 1971), many of the early cloze instruction studies were criticized for being too brief. Some investigators expected to see progress after as few as two exposures to cloze training. Have studies of a longer duration been conducted and does length of instruction seem to be an important factor?

The length of instruction in cloze studies has ranged from twenty minutes (Greathouse & Neal, 1976) to seven months (Pepin, 1973). The Greathouse & Neal study involved an idiosyncratic use of cloze (to teach the spellings of selected contractions) and perhaps should not be considered in this analysis. In general, the length of instructional programs clustered in the five to eight week range, although several programs lasted as long as fifteen weeks or more.

There doesn't appear to be any clear relationship between length of instruction and program effectiveness. Some relatively short programs were successful while some long programs were not. Two researchers monitored the effectiveness of their programs through interim testing. Martinez (1978) found that her students were giving significantly more syntactically and semantically acceptable responses after only two weeks of instruction. Johns (1977), on the other hand, observed

no differences in performance after eleven weeks of his twenty-five week program.

Not surprisingly, the conclusion seems to be that the quality of a cloze instruction program is more important than its length. The research also does not give any firm evidence as to the minimum length needed before cloze instruction is effective.

Analysis of Deletion Strategies

Five studies have specifically looked at the varying effects of different deletion systems. Two of those studies focused on the instructional effects of deleting certain word types. Johns (1977) compared every-10th, modifier, and noun-verb deletions while Rhodes (1972) deleted every-10th word at random and every-10th noun-verb. The other three studies examined modified versions of cloze. Paige (1976) compared five variations: whole word deletions first letter of deletions, first and last letter, all consonants and four word multiple-choice deletions. Houston (1976) deleted every-10th word but contrasted whole word deletions with deletions which retained the initial letter. Kazmierski (1973) compared random deletions of whole words with two different multiple-choice formats.

In each of the five studies mentioned above, no significant differences were found among the various types of deletion systems regardless of whether progress was assessed on standardized reading tests or project-developed cloze tests or multiple-choice tests. Based upon the results of these studies, it appears that the deletion system that is used has little or no differential effect on instruction. Apparently, modified cloze formats such as the retention of specific letter clues do not alter the effectiveness of the basic procedure.

In other studies, investigators have experimented with different deletion systems even though the deletion systems, as such, were not built into the studies as testable factors. It's important to look at these efforts before drawing conclusions in this area.

The Pessah (1975) and Martinez (1978) studies are similar in that they both used context clues to guide the development of their instructional materials. Using *SRA Reading for*

Understanding exercises, Pessah made only two deletions per paragraph. The deletions were equally distributed among three context clues: 1) direct explanation, 2) indirect explanation, and 3) inference from general sense of the story. Martinez, on the other hand, developed a set of exercises based on seven context clues. *In both of these studies, deletions were made* very selectively to give practice in using specific types of context clues.

Two studies conducted with primary students also illustrate the use of selective deletions. Gunn and Elkins (1976) first made highly predictable deletions from individual sentences of nursery rhymes and common expressions, then moved to selective deletions within language-experience stories. Later, they deleted transition words like "because" and "so" to stress cause-effect relationships, or words like "before" and "after" to show time order, or "if" and "then" to point out condition. Some of the exercises they created were deliberately aimed at inter-sentence context clues. Some deletions were as long as phrases or whole sentences. Kennedy (1972) also began with single deletions in individual sentences. Form class and position within the sentence were carefully controlled. Later, when short stories were used, deletions were again limited to one per sentence with form class controlled.

All four of these studies, Pessah, Martinez, Gunn and Elkins, and Kennedy, used deliberate, selective deletions to develop particular contextual relationships. All four of these studies were similar in another respect. They each produced significant gains in student comprehension or use of context clues. What sets these four studies apart from the five studies described earlier in this section is the selective use of deletions designed to achieve particular instructional goals.

In summary, it appears that selective deletion systems aimed at particular contextual relationships are more effective instructionally than semi-random deletion systems such as every-nth word or every-nth noun-verb. Of couse, theoretically, cloze has been built on the notion of semi-randomness and this notion has held up well, particularly in readability research. However, for instructional purposes, selective deletion systems seem to be more effective.

Analysis of Scoring Methods

When the cloze procedure is used for testing comprehension or assessing readability, the preferred scoring method is to count only exact replacements. However, when used for instructional purposes, teachers have been encouraged to accept synonyms as well as exact replacements. Does the method of scoring have any effect on the instructional usefulness of the cloze procedure?

Only one study could be found that specifically addressed that question. In two replications, Culhane (1972) tested the difference between synonym scoring and the exact replacement method. No significant differences were found between the two methods in either study, although synonym scoring was found to be more effective with low IQ students, as mentioned earlier.

The method of scoring simply hasn't been treated as an experimental variable in cloze instruction research. Nearly all investigators have used the exact replacement method in scoring cloze exercises and the scores on the training exercises seldom are used for data analysis.

A few researchers have explored alternative scoring methods, even though the methods were not directly tested. It may be worth noting two of these efforts. Discussion was an integral part of Sampson's (1979) study. Following the completion of each cloze exercise, small group discussion led by the teacher focused on the variety of acceptable answers and the reasons why some responses were acceptable and others weren't. Sampson evaluated his instructional program with two unique scoring methods: semantically consistent replacement scoring and divergent production. A semantically consistent replacement was judged to be "...one or more words which replace a deleted item acceptably within the context surrounding the deletion...[and]...make sense within the larger context of the paragraph and story" (pp.63-64). This system, of course, accepts replacements which may differ syntactically and semantically from the original deletions, as long as they are meaningful. Divergent production was assessed by tallying the number of semantically consistent replacements, per deletion, for each treatment group. Sampson found significant differences favoring the cloze instruction group on both of these measures.

Martinez (1978) applied some of the ideas from Goodman and Burke's *Reading Miscue Inventory* to her pre and post cloze tests in order to examine the linguistic changes in cloze responses that result from cloze instruction. Replacements were analyzed for syntactic acceptability (Does the response change the syntax of the sentence?) and semantic acceptability (Does the response change the meaning of the sentence?). She found that students receiving cloze instruction improved significantly in both categories. Interim testing also revealed that syntactic acceptability improved more quickly than semantic acceptability.

These two studies suggest that syntactic and/or semantic scoring systems may be more sensitive to changes that result from cloze instruction than exact replacement scoring or conventional comprehension tests. This would have implications for the evaluation of cloze instruction. The literature offers no clear answers as to which scoring method should be used during the actual instructional process. Common sense would suggest that if cloze is used for instructional purposes, synonyms or semantically acceptable replacements should be encouraged, but there is no research evidence to support this belief. It should also be recognized that synonym or semantic scoring lacks the objectivity and reliability of exact replacement scoring. However, objectivity may be less important in teaching than in testing. Requiring students to come up with exact replacements may be analogous to requiring the "one right answer" to comprehension questions.

Analysis of Student Attitudes

One aspect of cloze instruction that has been virtually unexamined is the whole question of student attitudes. Do students enjoy working cloze exercises? Do they prefer cloze instruction over other forms of reading instruction? Do they find cloze a meaningful and challenging way to improve their reading?

Martinez (1978) is the only investigator who systematically gathered data regarding student attitudes. After three weeks of cloze instruction, she administered an informal questionnaire. In response to "I like doing cloze exercises," 22 percent responded "a lot"; 65 percent said "some"; and 13 percent

chose "not at all." A second item ("Cloze responses are....") elicited 32 percent for "fun," 47 percent "O.K.," and 21 percent for "boring." These results could hardly be depicted as overwhelmingly enthusiastic.

A number of researchers have subjectively observed in their studies that after the initial novelty wore off, students became bored doing cloze exercises. There are three possible explanations for such boredom. First, is the lack of variety. The typical approach has been to produce a pool of cloze exercises which follow the same format and look the same, even though the content of the passages may change. Second, in an effort to demonstrate the effectiveness of cloze instruction, many researchers may have overused the approach. In some cases, two or three cloze exercises were presented daily for several weeks. Even ice cream loses its appeal if you eat too much of it. Third, unfortunately some of the instruction has been dull, routine, and mechanical. For example, in several studies, students entered a seemingly endless cycle of independently working cloze exercises and then checking responses without any analysis or discussion of performance.

Like any other instructional technique, the cloze procedure can be misused. To be effectivce, it should be used judiciously and in combination with other methods.

Summary

The conclusions that have grown out of the analysis and review of the literature are listed below:

1. The cloze procedure can be an effective teaching technique. However, it is no more nor no less effective than many other widely used instructional methods.

2. The cloze procedure is most effective in developing reading comprehension, or at least some of the skills involved in the comprehension process. It is least effective in improving word knowledge or vocabulary.

3. There is no evidence that cloze instruction is more effective for any particular type of material, such as narrative or expository. It can be effective with content material. Instruction in general cloze materials is more likely to transfer to specific content materials than specific training is to general reading.

4. Cloze instruction is no more effective for one age or grade level than another. There is also no evidence that cloze instruction is better suited to students reading either below, above, or on grade level.

5. Although the literature is mixed, cloze instruction is likely to be more effective when discussion is focused on clues which signal responses and on the appropriateness of responses.

6. There is no evidence that one type of grouping arrangement is more effective than another for cloze instruction.

7. Cloze materials which are carefully sequenced as to difficulty, length, or purpose are more effective than undifferentiated exercises.

8. The quality of a cloze instruction program is more important than its length. There is no firm evidence as to the minimum amount of instruction that is needed before cloze is effective.

9. Selective deletion systems aimed at particular contextual relationships are more effective than semi-random deletion systems.

10. Although the research shows no difference between exact replacement and synonym scoring, some form of semantically acceptable scoring should probably be encouraged for instructional purposes.

11. There is no evidence that students have more favorable attitudes toward cloze instruction than they do toward other forms of instruction.

Future Directions for Research and Instruction

One of the major observations derived from the literature is the broadened definition of the term "cloze procedure." As originally conceived by Taylor (1953), the cloze procedure relied on the semi-random sampling of whole words. By deleting everynth word, the odds were that the types of words deleted, for example lexical or structural, would balance out over an entire passage. In the past ten to fifteen years of cloze instruction research, that definition, at least in practice, has changed considerably. The term "cloze procedure" has been used to refer to the deletion of individual letters within words, groups of letters, individual words, phrases, clauses, and entire sentences. In addition, the deletions often have been made systematically, not randomly, in unrelated sentences rather than continuous prose. This raises a curious sort of question in this reviewer's mind. When does a fill-in-the-blank task cease to be a cloze procedure? A typical response to that question might be: What difference does it make, or who cares what it's called as long as it works? The price we pay for ignoring that question may be the acceptance of faulty assumptions. Our knowledge of cloze measurement, such issues as validity and reliability, has been established through the collective efforts of researchers following uniform procedures. When researchers experiment with modified formats, they usually assume that their new formats possess the same psychometric properties as tra-

ditional cloze. We should be cautious in transferring our knowledge about traditional cloze formats to modified formats until sufficient evidence supports such a transfer.

There are a number of unanswered questions regarding cloze instruction which could be addressed by future research. How can cloze best be used to supplement conventional methods of reading instruction? What form should discussion take in teaching the cloze process? How do task demands influence student performance? What method of scoring and feedback is most effective for instruction? How may cloze best be used to promote the reading and learning of content material? Do the effects of cloze instruction transfer from one style of writing to another or from one content area to another? How can the difficulty and purpose of close instruction be altered through the use of modified formats? As the above questions imply, future research needs to examine particular features of cloze instruction, not simply compare cloze teaching with conventional methods of instruction.

Two major areas for future research and instruction will be explored in some depth. First, the issue of selective deletions will be discussed. How should they be made and for what purpose? Second, alternative methods of sequencing cloze instruction will be proposed.

Random versus Selective Deletions

The literature appears to indicate that cloze instruction is more effective at improving reading comprehension than other aspects of reading proficiency. Furthermore, selective deletions which are focused on particular contextual relationships have a greater instructional effect than random deletions. Perhaps an analogy would be useful in explaining this difference. Suppose one wanted to improve his/her tennis game. One way of doing so would be to simply go out and play lots of sets of tennis under game-like conditions. A second approach would be to practice on selected aspects of the game, say the serve, backhand, or the volley in contrived non-game-like situations. Working random deletion cloze exercises is somewhat like playing sets of tennis. Some shots are easy; others are difficult. It's also difficult to predict, before a set begins, what aspects of your game will be tested the most. Working se-

lective deletion exercises, on the other hand, is like practicing selective aspects of your game. Eventually, of course, those selective aspects must be combined into a unified whole.

If cloze exercises which utilize selective deletions are effective, what process should researchers and practitioners follow in making deletions? What conceptual frameworks are available for guidance in this area? Three possible frameworks will be suggested.

One approach is to use context clue classification schemes, such as those of Artley (1943) and McCullough (1945), as a framework for making deletions. As reported earlier, Pessah (1975) and Martinez (1978) both developed cloze training materials based upon particular context clue categories and found such instruction valuable. Lee (1978) has offered some practical suggestions for using this approach, particularly as applied to materials in the content areas. One drawback to this approach is that the context clue categories often overlap and are not discrete. However, if the categories are chosen carefully and the training materials are unambiguous, this method can be effective.

A second approach might be to use the framework of Halliday and Hasan (1976). Halliday and Hasan have developed an elaborate system for analyzing and describing the semantic relations of text. Their framework consists of five different types of cohesive ties: reference, substitution, ellipsis, conjunction, and lexical cohesion. Reference pertains to items which make reference to somthing else for their interpretation. The three types of reference are personal, demonstrative, and comparative. Substitution refers to the replacement of one item by another. The three types of substitution are nominal, verbal, and clausal. Ellipsis, the omission of an item, is similar to substitution and is sometimes referred to as "substitution by zero," that is, something is left unsaid. Conjunction serves as a cohesive device by linking together what is to follow with what has gone before. Four types of conjunctive relations are additive, adversative, causal, and temporal. Lexical cohesion involves the use of vocabulary that is in some way related to previously occurring items. The two basic types of lexical cohesion are reiteration and collocation.

It would seem that researchers might be able to use the Halliday and Hasan system as a framework for making selective deletions in cloze training materials. For example, cloze exercises could be developed which focused on particular cohesive ties, such as causal conjunctive relations. Presumably, such instruction would increase students' ability to recognize and comprehend particular semantic relationships and ultimately result in improved comprehension. This approach could be readily adapted to expository texts in content areas.

A third approach has been suggested by Cambourne (1977). He conducted an exploratory pilot study to gain psycholinguistic insights into the silent reading process by applying *Reading Miscue Inventory* procedures to the cloze procedure. Building upon Goodman's notion of three cueing systems (syntactic, semantic, and graphophonic), Cambourne hypothesized that deletions could be made to assess a reader's use of the cueing systems. For example, he theorized that deleting words which have a very high syntactic role to play, such as conjunctions, prepositions, and inflections, would give insights into a reader's use of the syntactic cueing system. Use of the semantic cueing system could be inferred from deletions of high information bearing content words, such as nouns, verbs, adjectives, and adverbs. Insight into the graphophonic cueing system could be gained by deleting selected letters. Cambourne then developed cloze tests containing deletion patterns described above and administered them to elementary students stratified by reading ability.

Differences were noted between good and poor readers, which led Cambourne to infer five specific reading abilities or processes that are needed to do well on cloze tasks. Those five are:

1. Ability to refer back into the text to find a clue to meaning.
2. Ability to refer ahead in the text to find a clue to meaning.
3. Ability to use real world knowledge—the network of meanings and relationships already known about the topic or story being read.

4. Ability to use cumulative and logical build-up of story-line, i.e. monitoring the story/topic line to enable logical predictions.
5. Ability to use letter clues.

After identifying these five underlying abilities, Cambourne conducted a follow-up study. He created cloze tests by systematically making deletions aimed at each of the five categories. Another group of elementary students, stratified by reading ability, was tested. The results were analyzed by reading levels in an effort to distinguish between the processing strategies used by good and poor readers.

In general, Cambourne's findings parallel those of miscue analysis research. Above average readers make better use of the syntactic and semantic cueing systems. More specifically, above average readers use backward and forward searching behaviors much more effectively than below average readers; above average readers bring to bear a wider range of accumulated meanings and experiences; and above average readers maintain and monitor the story line more efficiently. Interestingly, there were no major differences between above average and below average readers' use of the graphophonic cueing system. It was also observed that average and below average readers produced a significant number of partial constructions. That is, many times their cloze responses were acceptable only with the first portion of the sentence and not with what followed the deletion. Above average readers, in contrast, made relatively few partial constructions. Their replacements tended to be either fully syntactic or totally wrong.

Cambourne's study is not, of course, a cloze teaching study. However, it may have implications for cloze instruction. If the five proposed categories are indeed valid and if good and poor readers differ in their ability to use the five processes, then conceivably Cambourne's system could be used as a framework for making selective deletions. Cloze instruction which followed this approach would be directed at developing one or more of the five basic processes. It should also be pointed out that Cambourne's categories are closely related to Halliday and Hasan's work. For example, backward processing may be thought of as anaphora, forward processing as cataphora, and use of real world knowledge as exophora. Although we have ev-

idence that children differ in their ability to use cohesive ties such as anaphora (Chapman, 1979; Kingston, 1977; and Richek, 1976-77), the instructional uses of cloze in this area have gone unexamined.

In summary, three conceptual frameworks have been suggested to guide researchers in designing cloze instruction materials which contain selective deletions: 1) context clue classification schemes; 2) Halliday and Hasan's cohesive ties; and 3) Cambourne's processing strategies. Cloze instruction which follows one or more of these frameworks will have a much sharper and more specific focus. The cloze exercises themselves will have fewer, more carefully selected deletions.

Sequencing Instruction

One of the conclusions derived from the literature review is that cloze materials which are carefully sequenced as to difficulty, length, or purpose are more effective than undifferentiated exercises. If such is the case, what guidance is available to researchers and practitioners who wish to sequence cloze instruction? Three approaches to sequencing will be discussed.

Samuels and his colleagues (1974) contend that cloze teaching studies haven't been successful because they "... did not provide training on the subskills necessary for successful cloze performance and the failure to find differences may have been due to the students' inability to perform and profit from cloze-type exercises" (p. 836). In an effort to design more specific instruction, Samuels undertook a task analysis of a partial model of word identification. The outcome was the identification of seven subskills which were believed to underlie cloze performance. The seven subskills are listed below:

1. Ability to say a word given an initial sound.
   Example: Tell me a word starting with/p/.
2. Ability to determine the beginning letter of a spoken word.
   Example: What is the first letter in "girl"?
3. Ability to recognize visually the initial letter of a word presented orally.

Example: What's the first letter in "boy"?
Student chooses from among letters presented visually, e.g., b, c, t, r.

4. Ability to use auditory context to predict words that could logically follow.
   Example: Finish this sentence. "My mother sleeps on her _____." (presented orally)
5. Ability to use auditory context to predict word(s) that could logically follow in a sentence hearing just the initial sound of the word.
   Example: Finish this sentence. "The cat ran after the /m/ _____." (presented orally)
6. Ability to use visual context to predict words(s) that would logically follow in a sentence without seeing the initial letter of the word.
   Example: Finish this sentence. "The children open the _____." (presented visually)
7. Ability to use visual context to predict word(s) that could logically follow in a sentence when given the initial letter of the target word.
   Example: Finish this sentence. "The girl ate the b_____." (presented visually)

Hypothesis/test training materials were developed to teach the seven subskills. Two studies were conducted, one with mentally retarded students and another with deficient third grade readers. It was found that training in the seven subskills improved the accuracy and speed of word recognition as well as performance on cloze tasks. Samuels' subskill sequence could offer guidance to researchers and practitioners interested in sequencing cloze instruction for primary level students.

A second approach to sequencing cloze instruction has been proposed by Aulls (1978). Aulls' sequencing system takes into consideration the type of deletions, the rate of deletions, and the difficulty of the reading material. This visual cloze training program consists of six methods of presenting cloze. The directions for each method are listed below:

Method 1. Delete every-10th word at random. Provide the first letter of each deletion.

Method 2. Delete every-10th structure word (noun determiners, prepositions, pronouns, auxiliary verb, and conjunctions).
Method 3. Delete every-5th structure word.
Method 4. Delete every-10th content word (noun, adjective, base verb, and adverb).
Method 5. Delete every-5th content word.
Method 6. Delete every-5th word at random.

In addition, Aulls proposes that a sequence be followed within each method. The first cloze exercise should be based on a language experience story generated by the student. The next two cloze exercises should be based on material at the student's *independent* reading level. The next three exercises should be based on materials at the student's *instructional* reading level. Thus a sequence of six cloze exercises would be used for each method and thirty-six exercises for the total program. Presumably, the number of exercises could be varied depending upon student performance and needs. Aulls also offers suggestions for discussing, modeling, and questioning which could be used throughout the training program. Although this is a logically developed sequence, there is no empirical evidence that this approach is effective.

Rankin (1977) has also proposed a series of sequence strategies for teaching reading comprehension with the cloze procedure. These strategies offer researchers and practitioners a series of options that could be used to modify and adapt the cloze procedure for instruction. The strategies are outlined below:

I. Introducing the Cloze Procedure
   A. Use aural cloze.
   B. Use aural-visual cloze.
   C. Use visual cloze.
II. Selecting Reading Passages
   A. Begin with language experience materials then proceed to materials from other sources.
   B. Begin with easy materials and proceed gradually to more difficult readability levels.
   C. Begin with high-interest, narrative materials; proceed to less interesting, expository materials.

III. Choosing Scoring Procedures
  A. Use synonym scoring.
  B. Use exact word scoring.
IV. Selecting Word Deletions
  A. Rate of deletions.
    1. Begin with a low deletion ratio (e.g. 1 deletion per 10 words) and gradually proceed toward higher deletion ratios (e.g. 1 deletion per 5 words) using cloze scores to determine pace.
  B. Type of deletions.
    1. Use lexical deletions with prompts.
    2. Use structural deletions with prompts.
    3. Use any word deletions with prompts.
    4. Use structural deletions without prompts.
    5. Use any word deletions without prompts.
    6. Use lexical deletions without prompts.
V. Determining Response Types
  A. Format
    1. Use multiple-choice alternatives.
    2. Use "fill-in-the-blank."
  B. Multiple-choice options
    1. Use alternatives of *different* semantical meaning and from *different* grammatical classes than the correct choice.
    2. Use alternative of *different* semantical meaning and from the *same* grammatical class as the correct choice.
VI. Using Visual Clues
  A. Pictures
  B. Letters
  C. Underline marks
  D. Length of blank space
VII. Using Reinforcements
  A. Use weak reinforcements for easy materials; use strong reinforcements for more difficult materials.
  B. Use strong reinforcements for "uninteresting" materials; use weaker reinforcements as the task becomes self-reinforcing.
  C. Use continuous reinforcement; use intermittent reinforcement.

Rankin cautions that these strategies should be viewed as hypotheses until empirical studies have confirmed their applicability and effectivess.

In summary, three approaches to sequencing cloze instruction have been presented: 1) Samuels' task analysis subskills, 2) Aulls' visual cloze training system, and 3) Rankin's sequence strategies. Although they are different, common threads run through all three approaches. Only one of the three, Samuels', has been empirically tested and only on a limited basis. More research is clearly needed to verify optimal sequences for presenting cloze instruction.

It is hoped that the results of future research, combined with our current state of knowledge, will lead us to more judicious and effective use of the cloze procedure as a teaching technique.

References

AARONSON, S. The use of a student-designed cloze procedure as a vocabulary tool. In P.L. Nacke (Ed.), *Programs and practices for college reading* (Vol. 2), Twenty-second Yearbook of the National Reading Conference. Boone, North Carolina: National Reading Conference, 1973.

ARTLEY, A.S. Teaching word meaning through context. *Elementary English Review*, 1943, *20*, 68-74.

AULLS, M. *Developmental and remedial reading in the middle grades*. Boston: Allyn and Bacon, 1978.

BERNATH, M.K. *Use of masked materials to develop insights in word attack and reading comprehension*. Northridge, Calif.: California State University at Northridge, 1977. (ERIC Document Reproduction Service No. ED 172 172)

BINKLEY, J.P. Cloze procedure in German for teaching and testing reading at the intermediate level (Doctoral dissertation, University of Kansas, 1974). *Dissertation Abstracts International*, 1975, *36*, 677A-678A. (University Microfilms No. 75-17, 573)

BLACKWELL, J.M., THOMPSON, R., & DZIUBAN, C. An investigation into the effectiveness of the cloze procedure as a vocabulary teaching tool. *Journal of Reading Behavior*, 1972, *4*(4), 53-54.

BURNHAM, B.W. Use of the cloze procedure to increase mathematical facility (Doctoral dissertation, Arizona State University, 1973). *Dissertation Abstracts International*, 1973, *33*, 3187B. (University Microfilms No. 73-384)

CAMBOURNE, B. *Some psycholinguistic dimensions of the silent reading process: a pilot study*. Paper presented at the annual meeting of the Australian Reading Conference, Melbourne, August 1977. (ERIC Document Reproduction Service No. ED 165 087)

CHAPMAN, J. Confirming children's use of cohesive ties in text: pronouns. *The Reading Teacher*, 1979, *33*, 317-322.

CLANTON, P.B. The effectiveness of the letter-cloze procedure as a method of teaching spelling (Doctoral dissertation, University of Arkansas, 1977). *Dissertation Abstracts International*, 1977, *38*, 2690A-2691A. (University Microfilms No. 77-23, 344)

COX, J.K. A comparison of two instructional methods utilizing the cloze procedure and a more traditional method for improving reading comprehension and vocabulary in context in a disadvantaged fourth-grade elementary school sample (Doctoral dissertation, University of Southern Mississippi, 1974). *Dissertation Abstracts International*, 1975, *35*, 6569A. (University Microfilms No. 75-09, 580)

CULHANE, J.W. The use of an iterative research process to study the adaptation of cloze for improving the reading comprehension of expository materials. (Doctoral dissertation, Syracuse University, 1972). *Dissertation Abstracts International*, 1973, *34*, 997A. (University Microfilms No. 73-19, 794)

ELLINGTON, B.J. Evaluation of the cloze procedure as a teaching device for improving reading comprehension (Doctoral dissertation, University of Georgia, 1972). *Dissertation Abstracts International*, 1973, *33*, 5031A. (University Microfilms No. 73-05, 686)

FAUBION, N.N. The effects of training in the use of cloze on the ability of fourth grade pupils to gain information from written discourse (Doctoral dissertation, Texas A&M University, 1971). *Dissertation Abstracts International*, 1972, *32*, 4486A. (University Microfilms No. 72-05, 655)

GRANT, P. *The cloze procedure for improving sixth grade students' reading comprehension and understanding of social studies materials*. New Brunswick, New Jersey: Unpublished master's thesis, Rutgers University, 1976. (ERIC Document Reproduction Service No. ED 141 754)

GREATHOUSE, L.J., & NEAL, B.J. Letter cloze will conquer contractions. *The Reading Teacher*, 1976, *30*, 173-176.

GREENEWALD, M.J. The effects of specific training in cloze and contextual clue exercises upon third-year French students' ability to utilize context (Doctoral dissertation, University of Wisconsin at Madison, 1974). *Dissertation Abstracts International*, 1974, *35*, 4128A. (University Microfilms No. 74-19, 918)

GUNN, P.V., & ELKINS, J. *Diagnosing and improving silent reading using cloze techniques or so what?* Brisbane, Australia: Queensland University, Educational Research Center. Paper presented at 6th World Congress of Reading, Singapore, 1976. (ERIC Document Reproduction Service No. ED 136 194)

GUSCOTT, C.E. The effect of cloze procedure exercises on the improvement of reading achievement and of reading comprehension of selected sixth-grade students (Doctoral dissertation, University of Akron, 1971). *Dissertation Abstracts International*, 1972, *32*, 3861A. (University Microfilms No. 72-04, 051)

HALLIDAY, M.A.K., & HASAN, R. *Cohesion in English*. London: Longman, 1976.

HOUSTON, A. An analysis of the cloze procedure as a teaching technique with disadvantaged children (Doctoral dissertation, University of Connecticut, 1976). *Dissertation Abstracts International, 1976, 36* 6459A. (University Microfilms No. 76-07, 192)

JOHNS, J.L. *An investigation using the cloze procedure as a teaching technique*. Paper presented at the meeting of the National Reading Conference, New Orleans, December 1977. (ERIC Document Reproduction Service No. ED 159 656)

JONGSMA, E. *The cloze procedure as a teaching technique*. Newark, Delaware: International Reading Association, 1971.

KAZMIERSKI, P.R. The effects of the cloze procedure upon the literal understanding of text materials by post secondary deaf students (Doctoral dissertation, Syracuse University, 1973). *Dissertation Abstracts International*, 1974, *34*, 7047A. (University Microfilms No. 74-10, 152)

KENNEDY, D. Training with the cloze procedure, visually and auditorily, to improve the reading and listening comprehension of third grade underachieving readers (Doctoral dissertation, Pennsylvania State University, 1971). *Dissertation Abstracts International*, 1972, *32*, 6206A. (University Microfilms No. 72-13, 880)

KENNEDY, D., & WEENER, P. Visual and auditory training with the cloze procedure to improve reading and listening comprehension. *Reading Research Quarterly*, 1973, *8*, 524-541.

KING, D.V. A study of the use of the cloze procedure in teaching plane geometry (Doctoral dissertation, University of Missouri at Columbia, 1974). *Dissertation Abstracts International*, 1975, *36*, 108A. (University Microfilms No. 75-16, 011)

KINGSTON, A.J. (Ed.) *Toward a psychology of reading and language: selected papers of Wendell W. Weaver*. Athens, Ga.: University of Georgia Press, 1977.

LEE, J.W. Increasing comprehension through use of context clue categories. *Journal of Reading*, 1978, *22*, 259-262.

MARTINEZ, P.S. The effect of teaching sixth graders to use context cues to complete cloze deletions in social studies materials (Doctoral dissertation, East Texas State University, 1978). *Dissertation Abstracts International*, 1978, *39*, 3503A. (University Microfilm No. 78-24, 144)

MCCULLOUGH, C.M. The recognition of context clues in reading. *Elementary English Review*, 1945, *22*, 1-5.

MCNAMARA, L.P. A study of the cloze procedure as an alternative group instructional strategy in secondary school American government classes (Doctoral dissertation, Northern Illinois

University, 1977). *Dissertation Abstracts International*, 1978, *39*, 216A. (University Microfilms No. 78-11, 183)

PAIGE, G.C. The relative efficacy of five modified cloze procedures for vocabulary instruction in a seventh-grade social studies class (Doctoral dissertation, Michigan State University, 1976). *Dissertation Abstracts International*, 1977, *37*, 5575A. (University Microfilms No. 77-05, 863)

PARADIS, E., & BAYNE, M. An examination of the use of cloze tasks during primary grade reading instruction. *Reading Improvement*, 1977, *14*, 57-61.

PEPIN, B. The cloze technique combined with high-interest, low-readability reading materials and language experience reading materials to improve the word knowledge and selected comprehension skill abilities of pupils in corrective reading classes (Doctoral dissertation, St. Johns' University, 1973). *Dissertation Abstracts International*, 1974, *34*, 3843A. (University Microfilms No. 73-29, 972)

PESSAH, N. *The effect of various teaching techniques, involving the cloze procedure, upon the reading achievement of community college students.* Paper presented at the annual meeting of the International Reading Association, New York, May 1975. (ERIC Document Reproduction Service No. ED 110 945)

PHILLIPS, B.D. The effect of the cloze procedure on content achievement and reading skills in a junior college introduction to business course (Doctoral dissertation, University of Northern Colorado, 1973). *Dissertation Abstracts International*, 1973, *34*, 212A. (University Microfilms No. 73-16, 796)

POWER, M.E. An investigation of modifying the order of difficulty of cloze passages with higher education opportunity program and special admit students (Doctoral dissertation, Syracuse University, 1976). *Dissertation Abstracts International*, 1977, *38*, 2597A. (University Microfilms No. 77-24, 861)

RANKIN, E.F. Sequence strategies for teaching reading comprehension with the cloze procedure. In P.D. Pearson & J. Hansen (Eds.), *Reading: theory, research, and practice*, Twenty-sixth Yearbook of the National Reading Conference. Clemson, South Carolina: National Reading Conference, 1977.

RHODES, L. The effect of a cloze procedure methodology on reading comprehension of sixth grade students of varying reading ability (Doctoral dissertation, University of Maine, 1972). *Dissertation Abstracts International*, 1973, *33*, 6598A. (University Microfilms No. 73-13, 079)

RICHEK, M.A. Reading comprehension of anaphoric forms in varying linguistic contexts. *Reading Research Quarterly*, 1976-77, *12*, 145-165.

RYNDERS, P. Use of the cloze procedure to develop comprehension skills in the intermediate grades (Doctoral dissertation, Syracuse University, 1971) *Dissertation Abstracts International*, 1972, *32*, 5676A. (University Microfilms No. 72-11, 863)

SAMPSON, M.R. Utilization of the cloze procedure as a teaching technique (Doctoral dissertation, University of Arizona, 1979). *Dissertation Abstracts International*, 1979, *40*, 3107A. (University Microfilms No. 79-27, 578)

SAMUELS, S.J., DAHL, P. & ARCHWAMETY, T. Effects of hypothesis/test training on reading skill. *Journal of Educational Psychology*, 1974, 66, 835-844.

SINATRA, R.C. The cloze technique for reading comprehension and vocabulary development. *Reading Improvement*, 1977, *14*, 86-92.

SMITH, E.L. Use of the cloze procedure in improving comprehension of junior college readers. In G.C. Schick & M.M. May (Eds.), *Reading: process and pedagogy*, Nineteenth Yearbook of the National Reading Conference, Volume II, Milwaukee, Wisconsin: National Reading Conference, 1970.

STEWART, E.W. A comparative study of the effectiveness of cloze and textbook procedures in a college reading program (Doctoral dissertation, University of Houston, 1967). *Dissertation Abstracts International*, 1968, *28* 4835A. (University Microfilms No. 68-7862)

TAYLOR, W.L. Cloze procedure: a new tool for measuring readability. *Journalism Quarterly*, 1953, *30*, 415-433.

WHITMER, R.L. An investigation into the effectiveness of cloze and inferential techniques upon French reading comprehension at the intermediate college level (Doctoral dissertation, University of Pittsburgh, 1975). *Dissertation Abstracts International*, 1975, *36*, 3465A. (University Microfilms No. 75-28, 716)

YELLIN, D. Two instructional strategies for reading comprehension employing the cloze procedure (Doctoral dissertation, Arizona State University, 1978). *Dissertation Abstracts International*, 1978, *39*, 2056A. (University Microfilms No. 78-19, 235)

Supplementary Resources on Cloze Instruction

The following bibliography contains references which offer practical teaching suggestions for the cloze procedure. Many of the ideas contained in these references could be readily implemented by classroom teachers.

ALLEN, V.F. Teaching beginning reading. Part 2: beyond sounds and letters. *'Alon Lemorim Leanglit*, 1977, *18*, 36-44.

AULLS, M. *Developmental and remedial reading in the middle grades*. Boston: Allyn and Bacon, 1978, 349-356.

BEIL, D. The emperor's new cloze. *Journal of Reading*, 1977, *20*, 601-604.

BLACHOWICZ, C.L. Cloze activities for primary readers. *The Reading Teacher*, 1977, *31*, 300-302.

BLANC, R.A. Cloze-plus as an alternative to guides for understanding and appreciating poetry. *Journal of Reading*, 1977, *21*, 215-218.

BOND, C.W. Cloze procedure and dialect considerations. *Clearing House*, 1977, *50*, 360-362.

BORTNICK, R., & LOPARDO, G.S. *The case for cloze in the classroom.* Paper presented at the annual meeting of the International Reading Association, New Orleans, May 1974. (ERIC Document Reproduction Service No. ED 094 327)

BORTNICK, R., & LOPARDO, G.S. The cloze procedure: a multi-purpose classroom tool. *Reading Improvement*, 1976, *13*, 113-117.

BORTNICK, R., & LOPARDO, G.S. An instructional application of the cloze procedure. *Journal of Reading*, 1973, *16*, 296-300.

BRENEMAN, B. *Reaction: the cloze and the composition process.* Paper presented at the annual meeting of the National Council of Teachers of English, San Diego, November 1975. (ERIC Document Reproduction Service No. ED 117 699)

CUNNINGHAM, J.W. An automatic pilot for decoding. *The Reading Teacher*, 1979, *32*, 420-424.

DISHNER, E.K. *The cloze procedure: a valuable tool for content teachers.* Paper presented at the annual meeting of the National Reading Conference, Houston, December 1973. (ERIC Document Reproduction Service No. ED 123 602)

DUPUIS, M. The cloze procedure: can it be used with literature? *Reading Improvement*, 1976, *13*, 199-203.

GOMBERG, A.W. Freeing children to take a chance. *The Reading Teacher*, 1976, *29*, 455-457.

GOVE, M.K. Using the cloze procedure in a first grade classroom. *The Reading Teacher*, 1975, *29*, 36-38.

GRANT, P.L. *Using the cloze procedure as an instructional device: what the literature says.* Paper presented at the annual meeting of the International Reading Association, Houston, May 1978. (ERIC Document Reproduction Service No. ED 155 673)

GRANT, P.L. The cloze procedure as an instructional device. *Journal of Reading*, 1979, *22*, 699-705.

HASKELL, J.F. Putting cloze into the classroom. *The English Record*, 1975, *26*, 83-90.

HELM, E.B. Uses of the cloze procedure in elementary schools. In P.L. Nacke (Ed.), *Programs and practices for college reading* (Vol. 2), Twenty-second Yearbook of the National Reading Conference. Boone, North Carolina: National Reading Conference, 1973.

HINES, T.C., & WARREN, J. A computerized technique for producing cloze material. *Educational Technology*, 1978, *18*, 56-58.

HONEYFIELD, J. Word frequency and the importance of context in vocabulary learning. *Regional English Language Center Journal*, 1977, *8* (2), 35-42.

JONES, M.B., & PIKULSKI, E.C. Cloze for the classroom. *Journal of Reading*, 1974, *17*, 432-438.

JONES, M.B., & PIKULSKI, J.J. Cloze for the content area teacher. *Reading World*, 1979, *18*, 253-258.

KARLOFF, K.R. Increasing comprehension with clozed summaries. *Journal of Reading*, 1977, *21*, 200-201.

KENNEDY, D. The cloze procedure, use it to develop comprehension skills. *Instructor*, November 1974, 82-86.

LEE, J.W. Increasing comprehension through use of context clue categories. *Journal of Reading*, 1978, *22*, 259-262.

LONG, G.A. Improving instruction through the use of the cloze procedure. *Journal of the American Association of Teacher Educators in Agriculture*, 1976, *17*(2), 7-10.

LOPARDO, G.S. LEA-cloze reading material for the disabled reader. *The Reading Teacher*, 1975, *29*, 42-44.

MEEKS, J.W., & MORGAN, R.F. Classroom and the cloze procedure: interaction in imagery. *Reading Horizons*, 1978, *18*, 261-264.

MERRITT, J.E. *Reading: seven to eleven*, 1975. (ERIC Document Reproduction Service No. ED 102 517)

MYERS, P.C. *The cloze procedure: latest research and uses.* Paper presented at the annual meeting of the International Reading Association, Anaheim, California, May 1976. (ERIC Document Reproduction Service No. ED 123 556)

NEUWIRTH, S.E. Guessing game. *The Reading Teacher*, 1980, *33*, 591-592.

NEW YORK STATE EDUCATION DEPT. *SPPED cloze training manual, form 082.* Albany, N.Y.: New York State Education Dept., Division of Evaluation and Division of Research, 1976. (ERIC Document Reproduction Service No. ED 127 353)

PIKULSKI, J.J. Using the cloze technique. *Language Arts*, 1976, *53*, 317-318, 328.

PLAISTER, T. Teaching reading comprehension to the advanced ESL student using the cloze procedure. *Regional English Language Centre Journal*, 1973, *4*(2), 31-38.

QUILLIN, H.J., & DWYER, E.J. Cloze modifications. *Journal of Reading*, 1978, *22*, 200-201.

RADICE, F.W. Using the cloze procedure as a teaching technique. *English Language Teaching Journal*, 1978, *32*, 201-204.

RAKES, T.A., & MCWILLIAMS, L.J. A cloze placement table. *Reading Improvement*, 1979, *16*, 317-319.

RANKIN, E.F. Sequence strategies for teaching reading comprehension with the cloze procedure. In P.D. Pearson & J. Hansen (Eds.), *Reading: theory, research, and practice*, Twenty-sixth Yearbook of the National Reading Conference. Clemson, South Carolina: National Reading Conference, 1977.

SAUNDERS, M. Clozing the gaps between language skills. *Exercise Exchange*, 1977, *22*, 7-11.

SCHELL, L.M. Promising possibilities for improving comprehension. *Journal of Reading*, 1972, *15*, 415-424.

SCHOELLER, A.W. Help pupils think to learn. *Instructor*, January 1973, 55-56.

SHERWOOD, W. *Cloze procedure: a technique for weaning advanced ESL students from excessive use of the dictionary.* CATESOL

occasional papers, No. 2. California Association of Teachers of English to Speakers of Other Languages, 1975. (ERIC Document Reproduction Service No. ED 126 703)

SILKY, W.D. Cloze for instruction: a continuum. *Journal of Reading*, 1979, *22*, 487.

STANSELL, J.C. Instructional needs in secondary reading: an illustrative case study. *Reading World*, 1978, *18*, 156-165.

THOMAS, K.J. Instructional applications of the cloze technique. *Reading World*, 1978, *18*, 1-12.

THOMAS, K.J. Modified cloze: the intralocking guide. *Reading World*, 1979, *19*, 19-27.

TIERNEY, R.J., READENCE, J.E., & DISHNER, E.K. *Reading strategies and practices: a guide for improving instruction*. Boston: Allyn and Bacon, 1980, 19-26.

Cloze Bibliographies

The following bibliographies may be useful to researchers and practitioners who wish to do additional reading about the cloze procedure.

AITKEN, K.G. *TESL applications of the cloze procedure: an annotated bibliography*. 1975. (ERIC Document Reproduction Service No. ED 109 922)

BOYCE, M.W. *A comprehensive bibliography of the cloze procedure*. Toorak, Australia: State College of Victoria, 1974. (ERIC Document Reproduction Service No. ED 099 830)

BOYCE, M.W. *A comprehensive bibliography of the cloze procedure: Part B*. Toorak, Australia: State College of Victoria, 1976. (ERIC Document Reproduction Service No. ED 127 580)

BUROS, O.K. (Ed.). Cloze procedure (Ebbinghaus completion method) as applied to reading. *The eighth mental measurements yearbook*, Volume II. Highland Park, New Jersey: Gryphon Press, 1978, 1163-1178.

MCKENNA, M.C., & ROBINSON, R.D. *An introduction to the cloze procedure: an annotated bibliography*. Newark, Delaware: International Reading Association, 1980.

RILEY, P.M. *The cloze procedure: a selected annotated bibliography*. New Guinea: Papua New Guinea University of Technology, 1973. (ERIC Document Reproduction Service No. ED 106 749)

ROBINSON, R.D. *An introduction to the cloze procedure: an annotated bibliography*. Newark, Delaware: International Reading Association, 1972.

Appendix

Summary of Cloze Teaching Studies

Researcher	Sample	Instructional Goal	Length of Treatment	Criterion Measure	Finding
Aaronson (1973)	Disadvantaged college students (n=30)	To increase vocabulary	Not stated	Student-designed cloze test and teacher-designed cloze test	No significant difference between types of tests
Bernath (1977)	Fourth graders (n=238)	To increase reading comprehension	Thirty minutes	Project-developed cloze test and multiple-choice test	Significant differences favoring cloze instruction on cloze test and multiple-choice test
Binkley (1975)	College students enrolled in German (n=10)	To increase reading comprehension of German	One semester	*MLA Cooperative German: Reading; Nelson-Denny;* German cloze test	Significant gains on MLA and cloze tests; no significant gains on *Nelson-Denny*
Blackwell, et al. (1972)	Third and fourth graders (n=29)	To increase vocabulary	Five weeks	*Stanford Diagnostic Reading Test*	Significant difference favoring cloze-trained group

Researcher	Sample	Instructional Goal	Length of Treatment	Criterion Measure	Finding
Burnham (1973)	Eight classes of college algebra	To increase math comprehension, math facility, and general reading comprehension	Eleven weeks	Math cloze test English cloze test Math exams in course	Significant differences favoring cloze-trained group on math comprehension; no difference in general comprehension or math facility
Clanton (1977)	Sixth and seventh graders (n=194)	To increase spelling ability	Three weeks	Spelling posttest and weekly spelling tests	No significant differences between cloze-training and regular spelling program
Cox (1974)	Disadvantaged fourth graders (n=71)	To increase reading comprehension and vocabulary in context	Eight weeks	*SRA Achievement Test*	No significant differences in treatment; no significant interaction between treatment and reading ability
Culhane (1972)	Not stated	To increase reading comprehension of expository materials	Not stated	Not stated	Teacher-led discussion significantly better than student-led discussion; significant interaction between scoring method and IQ; significant difference favoring cloze instruction

Ellington (1972)	Three eleventh-grade English classes (n=81)	To increase reading comprehension, vocabulary, and speed	Six weeks	*Cooperative English Test: Reading*	No significant difference between cloze and regular instruction
Faubion (1971)	Three fourth grade classes	To increase reading comprehension	Two weeks	Project-developed cloze tests (lexical and structural); *Stanford Achievement Test: Reading*	No significant difference between cloze and daily silent reading on SAT and cloze-structural; significant difference favoring cloze on lexical test
Grant (1976)	Sixth graders (n=42)	To increase vocabulary, reading comprehension and knowledge of social studies	Nine weeks	*Gates-MacGinitie Reading Test;* Project-developed cloze test; Informal social studies test	No significant difference between cloze and regular social studies instruction on vocabulary and comprehension; significant difference favoring cloze on social studies test
Greathouse & Neal (1976)	Seventeen classes grades one through six (n=423)	To increase spelling of contractions	Twenty minutes	Spelling test of three contractions	Fourth to sixth graders profited most; no value to first graders

Researcher	Sample	Instructional Goal	Length of Treatment	Criterion Measure	Finding
Greenewald (1974)	High School French III students (n=200)	To increase reading comprehension of French	Six sessions	Project-developed cloze tests in English and French	No significant difference among context training, cloze training, or vocabulary exercises
Gunn & Elkin (1976)	Third graders	To increase reading comprehension	Eight weeks	Standardized test (name not given)	Cloze training effective in improving comprehension
Guscott (1971)	Sixth graders (n=60)	To increase knowledge of social studies and general reading achievement	Eight weeks	Project-developed social studies cloze test; *Iowa Test of Basic Skills: Reading*	Significant improvement on ITBS; no significant improvement in social studies
Houston (1976)	Twelve classes of disadvantaged sixth graders	To increase vocabulary and reading comprehension	Nine weeks	*Gates-MacGinitie Reading Test*	No significant difference between cloze and regular instruction in vocabulary; significant difference favoring control group in comprehension
Johns (1977)	Twelve classes of fourth graders (n=222)	To increase vocabulary and reading comprehension	Twenty-five weeks	*Gates-MacGinitie Reading Test*	No significant differences in vocabulary or comprehension

Kazmierski (1973)	Profoundly deaf postsecondary students (n=60)	To increase reading comprehension	Ten sessions	Project-developed cloze test	No significant difference between cloze and regular instruction in comprehension
Kennedy & Weener (1973)	Below level third graders (n=80)	To increase reading comprehension and listening comprehension	Five sessions	*Durrell Listening-Reading Test*	Significant differences favoring cloze-trained groups; visual training more generalizable than auditory training
King (1974)	High school geometry students	To increase proficiency in geometry	Not stated	Standardized geometry test; Project-developed geometry test	No significant difference between cloze and regular geometry instruction
Martinez (1978)	Middle school honor students (n=102)	To increase reading comprehension of social studies	Six weeks	Project-developed cloze test and conventional comprehension test	Significant differences favoring cloze over regular reading instruction
McNamara (1977)	High school American Government students (n=309)	To increase knowledge of American Government	Seven weeks	Project-developed multiple-choice content test	No significant difference among cloze, SQ3R, and lecture-discussion

Researcher	Sample	Instructional Goal	Length of Treatment	Criterion Measure	Finding
Paige (1976)	Five seventh-grade social studies classes (n=127)	To increase vocabulary and knowledge of social studies	Not stated	Project-developed test of vocabulary and content	No significant difference among cloze approaches; all approaches effective
Paradis & Bayne (1975)	First and second graders (n=29)	To increase reading achievement	Eight weeks	Project-developed cloze test; *Diagnostic Reading Scales: Word Lists; Stanford Achievement Test: Reading*	No significant difference between cloze and self-selected reading
Pepin (1973)	Thirty corrective reading classes at fourth-, fifth-, sixth-grades (n=278)	To increase vocabulary and selected comprehension skills	Seven months	*California Achievement Test: Reading*	No significant differences among cloze high-interest low-vocabulary, cloze-LEA, and regular high-interest low-vocabulary
Pessah (1975)	Disadvantaged college students (n=100)	To increase vocabulary and comprehension	Five weeks	*Nelson-Denny*	Significant differences favoring cloze over regular and individualized remedial instruction

Phillips (1973)	College students enrolled in Introduction to Business (n=67)	To increase knowledge of business concepts and reading skills	Fourteen weeks	Knowledge of business test; *Nelson-Denny*	No significant difference among cloze and traditional instructional
Power (1976)	Disadvantaged college students (n=45)	To increase reading comprehension	Five weeks	*Diagnostic Reading Test*	No significant difference between cloze and lecture-discussion
Rhodes (1972)	Sixth graders (n=153)	To increase literal, inferential, and total reading comprehension	Six weeks	*Stanford Diagnostic Reading Test*	No significant difference between cloze and regular comprehension instruction
Rynders (1971)	Sixth graders (n=189)	To increase reading comprehension	Five weeks	*Gates-MacGinitie Reading Test*	No significant difference between cloze and regular comprehension instruction
Sampson (1979)	Third graders (n=92)	To increase vocabulary, comprehension, divergent production	Fifteen weeks	*Gates-MacGinitie Reading Test;* Project-developed cloze test; Divergent-production test	Significant difference favoring cloze over reading centers on comprehension; no difference on vocabulary

Researcher	Sample	Instructional Goal	Length of Treatment	Criterion Measure	Finding
Sinatra (1977)	High-risk second—sixth graders (n=44)	To increase reading comprehension	Four weeks	Project-developed cloze tests and *Stanford Diagnostic Reading Test*	Significant gains on cloze test for all grade levels; significant gains on SDRT for second only
Smith (1970)	Junior college students (n not given)	To increase reading comprehension	Not stated	None given	Subjective evaluation supports use of cloze
Stewart (1967)	Freshman college students (n=91)	To increase vocabulary, comprehension, and total reading achievement	Eight weeks	Not stated	No significant difference between cloze and college reading textbook
Whitmer (1975)	College students enrolled in French III (n=52)	To increase reading comprehension of French	One semester	*MLA Cooperative French: Reading*	Significant differences favoring cloze-supplemented instruction
Yellin (1978)	Four classes of fourth graders (n=104)	To increase reading comprehension	Six weeks	Project-developed cloze test	No significant difference between product and process cloze instruction.

Note: In some cases, the reviewer relied on published reports, including *Dissertation Abstracts International*, rather than on unpublished original dissertations.